

BEST AVAILABLE COPY**Application No.: 09/632,809****Docket No.: 1509-277****REMARKS**

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the preceding amendments and the following remarks.

The specification has been amended for clarity and to correct a clerical error.

The claims have been carefully reviewed and amended to define applicant's contribution to the art with greater particularity. Claim 10 has been cancelled without prejudice or disclaimer. In addition, claims 21-31 have been added to provide applicant with the protection to which he is deemed entitled.

In response to the query in the portion of the Office Action entitled "Response to Amendment," applicant advises that the instruction to cancel claim 9 was a clerical error. Claim 9 is retained.

In response to the rejection of claims 1, 3, 6-8, 12, 15-17 and 20, applicant notes independent claims 1, 12 and 20 now require an initial line pattern of an original image to be warped based on pixel values of the original image to produce a warped line brightness pattern. New independent claim 21 requires a horizontally and vertically warped line pattern to be produced in response to brightness values of pixels of an original image. The series of warped lines represent warped brightness values of the pixels of the original image. Independent claims 1, 12 and 20 also require an engraving-style halftone image to be produced by mapping brightness values of pixels of the original image onto the warped line pattern. The mapping includes a comparison of original image pixel brightness values with pixel brightness values of the warped line pattern. New claim 21 is similar and requires comparing the brightness values of pixels of the original image to the brightness values of spatially corresponding values of the horizontally and vertically warped line pattern to produce an engraving style halftone image such that (a) pixels of the engraving style halftone image that spatially correspond with pixels of the original image are black in response to the spatially corresponding pixels of the original image having a brightness value less than the brightness value of the spatially corresponding pixels of the horizontally and vertically warped line

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pattern, and (b) pixels of the engraving-style halftone image that spatially correspond with the pixels of the original image are white in response to the spatially corresponding pixels of the original image having a brightness value greater than the brightness value of the spatially corresponding pixels of the horizontally and vertically warped line pattern. New independent claim 29 is directed to an image processing system and includes limitations similar to those of new independent claim 21.

The foregoing steps and operations are not disclosed or made obvious by the proposed combination of *Lathrop* (U.S. Patent No. 5,097,427) in view of *Curry* (U.S. Patent No. 5,696,604). In *Lathrop*, any pattern that might be considered as "warped" is a spatial pattern, rather than a warped line brightness pattern, as required by each of claims 1, 12, 20, 21 and 29. Further, the mapping performed by *Lathrop* cannot be considered as including the comparison set forth in claims 1, 12, 20, 21 and 29. *Curry*, relied on as a secondary reference to reject claims 1, 12 and 20, discloses no details of how to produce an engraving-style halftone image; in particular, *Curry* does not disclose the aforementioned warp line brightness patterns, mapping and comparison operations.

Smitt (U.S. Patent No. 5,988,504), relied on for the mapping feature, does not disclose mapping of an original image against a warped line brightness pattern to produce an engraving-style halftone image. Because of this factor, one of ordinary skill in the art would not have combined *Smitt* with the Examiner's proposed combination of *Lathrop* and *Curry* to arrive at the combinations of independent claims 1, 12, 20, 21 or 29.

Accordingly, Applicant respectfully submits that the amended/added independent claims are patentable over the applied art of record and request that the rejections be withdrawn.

It should be noted that the above amendments have been made solely for the purpose of expediting prosecution and are not necessitated by the Examiner's rejections. Specifically, Applicant maintains his position detailed in the previously submitted Responses/Amendments that the references are not properly combinable in the manner the Examiner proposed, lacking adequate suggestions or motivations both in the references themselves and in the knowledge generally available in the art. Applicant further submits that the Examiner's proposed combination is

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improper because the references are only peripherally related to each other: none of the references is concerned with producing an engraving-style halftone image other than *Curry*, which provides no details as to how such an image is produced.

Claims 3-9, 11, 13-17, 19, 22-28 and 30-31 depend from one of independent claims 1, 12, 20, 21 and 29, and are considered patentable at least for the reasons advanced with respect to the amended/added independent claims. The dependent claims are also believed patentable on their own merits as will be discussed herein below in detail.

In particular, Applicant disputes the Examiner's contention that in *Lathrop* the warping is based on the partial derivatives between the texture signals and the object space and that such warping is applicable to the claims of the present application. Claims 6 and 15 require warping the initial line pattern based on gradient information of the original image, not the gradient of the initial line pattern, i.e., the texture signals in the case of the *Lathrop* disclosure, as the Examiner has suggested. Applicant also notes that claims 6 and 15 now require the initial line pattern of the original image to be warped based on the brightness gradient information computed from pixel brightness values of the original image.

Further, claims 7 and 16 require the brightness gradient information for a pixel location of the original image to be based on a weighted average of brightness gradient information of the original image as computed from neighboring pixel brightness values. *Lathrop* has no disclosure of computing gradient values based on brightness values.

In addition, claims 4 and 13 have been amended to distinguish over *Arnold* (U.S. Patent No. 5,929,866) by defining the brightness density map as being a representation of the brightness of pixels along a line of the initial line pattern of the original image. The discussion in column 2, lines 22-25, and column 4, lines 40-44, of *Arnold* indicates that the density values *Arnold* discusses are not germane to the density as now set forth in claims 4 and 13.

The newly submitted dependent claims define features of the two embodiments relating to forming the horizontally and vertically warped line pattern. Applicant respectfully submits that the applied references do not fairly teach or suggest the features of the new dependent claims, e.g., step

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(d) of claims 22 and 30.

In view of the foregoing amendments and remarks, favorable reconsideration and allowance are deemed in order and therefore respectfully requested.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 08-2025 and please credit any excess fees to such deposit account.

Respectfully submitted,

Akio YAMAMOTO

By

Benjamin J. Hauptman, #29,310

HEWLETT-PACKARD COMPANY

Intellectual Property Administration

P.O. Box 272400 BJH/KL/klb

Fort Collins, CO 80527-2400

Telephone: 703-684-1111

Facsimile: 970-898-0640

Date: July 7, 2005

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